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(54) SLIDE SWITCH AND MANUFACTURING METHOD THEREFOR

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a slide switch used for various electronic equipments which enables its easy assembly and easy automatization of the assembly, and to provide a manufacturing method therefor.

SOLUTION: The slide switch which enables its easy assembly and easy automatization of the assembly is so constituted that a spring 15 which forces an operating member 13 to return is contained in a containing portion 11A of a case 11, and pressing members 13B which press the spring 15 in a compressing direction when the operating member 13 is operated to move is disposed in the operating member 13.

[Claim(s)]

[Claim 1] A case where two or more stationary contacts were implanted, and an operated object stored movable in this case, A slide switch which provided a pressing part which presses said spring to a compression direction in an operated object when became a movable contact piece with which this operated object is equipped, and which attaches and detaches to said stationary contact from a coiled spring which energizes said operated object, and said spring was stored to a storage part of a case and moving operation of the operated object was carried out.

[Claim 2] The slide switch according to claim 1 which made a pressing part counter both ends of an operated object, and it was provided, and made a size between this pressing part a little larger than a size of a storage part of a case.

[Claim 3] A manufacturing method of the slide switch according to claim 1 which stores an operated object equipped with a movable contact piece one by one, and assembles it from a top after storing a spring to a storage part to a case.

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a slide switch used for various electronic equipment, such as a cellular phone and a digital camera, and a manufacturing method for the same.

[0002]

[Description of the Prior Art]In recent years, in electronic devices, such as a cellular phone and a digital camera, as the change of volume, or a switch for operation of the size of zoom, the operation to a 2-way is possible, and if a hand is lifted, many what is called Ohtori turn type slide switches which return to a center valve position are used.

[0003]Such a conventional slide switch is explained using drawing 5 - drawing 7.

[0004]The sectional view of the conventional slide switch and drawing 6 are isomerism solution perspective views, and drawing 5 is a case made of insulating resin in approximately box-like in 1 in the figure, Two or more stationary contacts 2 of electric conduction metal are implanted in the medial surface behind this case 1, and the pressing part 1A of the shape of a rib which extends and counters from left and right laterals is formed in the inner base.

[0005]And 3 is an operated object made of insulating resin, the final controlling element 3A projects to the case 1 front, and after the coiled spring 5 has bent a little, it is stored by the concave storage part 3B established in the approximately center undersurface.

[0006]Slot 3C which the pressing part 1A of the case 1 inserts in is provided in the right and left of the storage part 3B of the operated object 3, and the operated object 3 is stored movable in the case 1 to the longitudinal direction.

[0007]And 4 is a movable contact piece of electric conduction metal, the rear side of the operated object 3 is equipped with pars intermedia, and the contact surface 4A of both ends contacts the rear side of the case 1 elastically in the state where it bent a little.

[0008]6 is covering made from a metal plate, the opening of the case 1 upper surface on which this covering 6 stored the operated object 3 is covered, and the slide switch is constituted.

[0009]Next, the manufacturing method of the slide switch constituted in this way is explained.

[0010]First, after equipping the operated object 3 with the movable contact piece 4, the operated object 3 is held so that the storage part 3B may become upward, and it stores, stir-frying the spring 5 to the storage part 3B.

[0011]Then, the operated object 3 is reversed, the operated object 3 is held so that the storage part 3B where the spring 5 was stored may become downward, it stores in the case 1, and finally, the opening of the case 1 upper surface is covered with the covering 6, and a slide switch is completed.

[0012]In the above composition, if the final controlling element 3A is operated leftward from the center valve position shown in drawing 5, to be shown in the sectional view of drawing 7, with movement of the operated object 3, the left end of the spring 5 will separate from the left lateral of the storage part 3B, will contact elastically the pressing part 1A on the left-hand side of the case 1, and will be pressed and compressed into the right lateral of the storage part 3A.

[0013]And the contact surface 4A of movable contact piece 4 both ends with which the operated object 3 was equipped carries out elastic contact sliding of the rear side of the case 1, and contacts elastically the stationary contact 2 of left-hand side and a center, and the electrical link of a switch is performed via the movable contact piece 4.

[0014]If the operating physical force to the final controlling element 3A is canceled, the right end of the spring 5 presses the right lateral of the storage part 3A, and it is constituted by the energization force of the compressed spring 5 so that the operated object 3 may return to the original center valve position.

[0015]As for the above, when the final controlling element 3A is operated rightward, conversely, the spring 5 is compressed between the pressing part 1A of case 1 right-hand side, and the left lateral of the storage part 3B, and the contact surface 4A of the movable contact piece 4 is constituted so that the stationary contact 2 of a center and right-hand side may be contacted elastically.

[0016]

[Problem to be solved by the invention]However, in the above-mentioned conventional slide switch, since it was necessary to reverse this operated object 3 and to store in the case 1 after turning the storage part 3B of the operated object 3 upward and storing the spring 5 in the case of an assembly, the problem that assembly work was complicated and time was required occurred.

[0017][This invention], This invention is such a conventional section thing.

The purpose is a thing and is providing slide switch **** which is easy to assemble and can also attain automation of an assembly easily.

[0018]

[Means for solving problem]To achieve the above objects, this invention has the following composition.

[0019]The invention of this invention according to claim 1 stores the coiled spring which energizes an operated object to the storage part of a case, and. By constituting the slide switch which provided the pressing part which presses a spring to a compression direction in the operated object, and storing a spring to the storage part of a case, when moving operation of the operated object is carried out, What is called since [that stores the operated object equipped with a spring or a movable contact piece, etc. from a top one by one to a case in the case of an assembly] it can accumulate and can assemble by a formula, an assembly is easy and has the operation that the slide switch which is easy to attain automation of an assembly can be obtained.

[0020]In the invention according to claim 1, the invention according to claim 2 makes a pressing part counter the both ends of an operated object, and provides it, and. The size between this pressing part is made a little larger than the size of the storage part of a case, and since an operated object can be stored without touching with a pressing part the spring stored in the state where it bent a little in the storage part of the case, at the time of an assembly, it has the operation that it can assemble still more easily.

[0021]After the invention according to claim 3 stores a spring to a storage part to a case, it is a manufacturing method of the slide switch according to claim 1 which stores the operated object equipped with a movable contact piece one by one, and assembles it from a top, and an assembly has the operation that it is easy and an inexpensive slide switch can be realized.

[0022]

[Mode for carrying out the invention]Hereafter, the 1 embodiment of this invention is described using drawing 1 - drawing 4.

[0023](Embodiment) In [the sectional view of the slide switch according / drawing 1 / to the 1 embodiment of this invention and drawing 2 are isomerism solution perspective views, and] the figure, 11 is a case made of insulating resin, such as a polyphenylene ape fight and polybutylene terephthalate, in approximately box-like, and two or more stationary contacts 12A-12C of electric conduction metal by which noble metal plating, such as silver, was performed to the copper alloy etc. are implanted in the medial surface behind this case 11.

[0024]And in the storage part 11A established in case 11 inner base by becoming depressed, the coiled springs 15, such as copper wire, are stored in the state where it bent a little in the longitudinal direction, and the slot 11B which extends to left and right laterals is formed in storage-part 11A both ends.

[0025]13 is an operated object made of insulating resin, such as polybutylene terephthalate and nylon, The final controlling element 13A projects to the case 11 front, and the rib-like pressing part 13B is countered and formed in both ends, it is inserted in this pressing part 13B fang furrow part 11B, and the operated object 13 is stored movable in the case 11 to the longitudinal direction.

[0026]The size L1 between the pressing parts 13B of these operated object 13 right and left is formed a little more greatly than the size L2 of the longitudinal direction of the storage part 11A where the spring 15 of case 11 inner base was stored.

[0027]And 14 is the movable contact piece of electric conduction metal in which noble metal plating, such as silver, was performed to the copper alloy etc., the rear side of the operated object 13 is equipped with pars intermedia, and the contact surfaces 14A and 14B of both ends contact the rear side of the case 11 elastically in the state where it bent a little.

[0028]16 is covering made from metal plates, such as a galvanized steel sheet, the opening of the case 11 upper surface on which this covering 16 stored the operated object 13 is covered, and the slide switch is constituted.

[0029]Next, the manufacturing method of the slide switch constituted in this way is explained.

[0030]First, it stores to the case 11 which turned the opening on top up, stir-frying the spring 15 in the storage part 11A of an inner base.

[0031]Then, the pressing part 13B is placed upside down, the operated object 13 equipped with the movable contact piece 14 is stored in the case 11 from a top, finally, the opening of the case 11 upper surface is covered with the covering 16, and a slide switch is completed.

[0032]That is, what is called since [that stores each component parts from a top one by one to the case 11 which turned the opening up] it can accumulate and can assemble by a formula, automation of an assembly can also be attained easily.

[0033]Since it is formed a little more greatly at this time than the size L2 of the longitudinal direction of the storage part 11A where the size L1 between the pressing parts 13B of the operated object 13 was stored by the spring 15 bending, the operated object 13 can be stored into the case 11, without touching the spring 15 with the pressing part 13B.

[0034]If the final controlling element 13A is operated leftward in the above composition from the center valve position shown in drawing 1, as shown in the sectional view of drawing 3, With movement of the operated object 13, the right end of the spring 15 separates from the right lateral

of the storage part 11A, is pressed by the pressing part 13B on the right-hand side of the operated object 13, and is compressed between the left laterals of the storage part 11A.

[0035]And the contact surfaces 14A and 14B of movable contact piece 14 both ends with which the operated object 13 was equipped carry out elastic contact sliding of the rear side of the case 11, The contact surface 14A contacts the central stationary contact 12A elastically, the contact surface 14B contacts elastically respectively the left-hand side stationary contact 12B, the stationary contacts 12A and 12B conduct via the movable contact piece 14, and the electrical link as a switch is performed.

[0036]If the operating physical force to the final controlling element 13A is canceled, the right end of the spring 15 presses the pressing part 13B on the right-hand side of the operated object 13, and it is constituted by the energization force of the compressed spring 15 so that the operated object 13 may return to the original center valve position.

[0037]When the final controlling element 13A is operated rightward, Contrary to the above, the spring 15 is compressed between the pressing part 13B on the left-hand side of the operated object 13, and the right lateral of the storage part 11A, and it is constituted so that the contact surface 14A of the movable contact piece 14 may contact elastically the right-hand side stationary contact 12C and the contact surface 14B may contact the central stationary contact 12A elastically respectively.

[0038]Thus, according to this embodiment, store the spring 15 which energizes the operated object 13 to the storage part 11A of the case 11, and. By forming the pressing part 13B which presses the spring 15 to a compression direction in the operated object 13, and constituting a slide switch, when moving operation of the operated object 13 is carried out, Since the operated object 13 grade equipped with the spring 15 or the movable contact piece 14 can be stored one by one, and can be accumulated from a top to the case 11 in the case of an assembly and it can assemble by a formula, an assembly is easy and a slide switch which is easy to attain automation of an assembly, and a manufacturing method for the same can be obtained.

[0039]Make the pressing part 13B counter the both ends of the operated object 13, and provide it, and. By making the size L1 between this pressing part 13B a little larger than the size L2 of the storage part 11A of the case 11, Since the operated object 13 can be stored without touching with the pressing part 13B the spring 15 stored in the state where it bent a little in the storage part 11A of the case 11, at the time of an assembly, it can assemble still more easily.

[0040]Although the above explanation explained as composition which the storage part 11A was hollowed in the inner base of the case 11, and was provided in it, As shown in the exploded perspective view of drawing 4, enforcement of this invention is possible also as composition which forms the storage part 17B on the inner base of the case 17, and stores the spring 15 to this by the abbreviated L character-like four lobes 17A.

[0041]

[Effect of the Invention]According to this invention, the advantageous effect that an assembly is easy and a slide switch which is easy to attain automation of an assembly, and a manufacturing method for the same can be obtained is acquired as mentioned above.

[Brief Description of the Drawings]

[Drawing 1]The sectional view of the slide switch by the 1 embodiment of this invention

[Drawing 2]Isomerism solution perspective view

[Drawing 3]The sectional view at the time of the operation
[Drawing 4]The exploded perspective view by the embodiment of the others
[Drawing 5]The sectional view of the conventional slide switch
[Drawing 6]Isomerism solution perspective view
[Drawing 7]The sectional view at the time of the operation
[Explanations of letters or numerals]
11 and 17 Case
11A and 17B Storage part
11B Slot
12A, 12B, and 12C Stationary contact
13 Operated object
13A Final controlling element
13B Pressing part
14 Movable contact piece
14A and 14B Contact surface
15 Spring
16 Covering
17A Lobe